

***ECTOEDEmia HANNOVERELLA* (GLITZ, 1872) (LEP.: NEPTICULIDAE)
NEW TO THE BRITISH ISLES**

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Abstract

The first occurrence in Britain of *Ectoedemia hannoverella* (Glitz, 1872) (Lep.: Nepticulidae) is documented.

Introduction

On 25 September 2002, while recording leaf-mining Lepidoptera in the Mildenhall area of Suffolk (O. S. grid reference TL 7276, VC 26) some fallen poplar leaves on the ground attracted our attention and were noticed to contain mines in the basal area of the leaf; the mines were accompanied by some thickening and discoloration of the petiole. On consulting the key to nepticulid leaf-mines in Emmet (1983), we came across only one species that mined in this manner on poplar - *Ectoedemia turbidella*, and the mines were recorded as such. The fact that the key specified that *E. turbidella* occurred on *Populus canescens*, grey poplar, rather than just *Populus* was rather rashly overlooked at the time. Our discovery was mentioned to Neil Sherman who subsequently found similar mines on *Populus* × *canadensis*, Italian poplar, on 1 October 2002 in the Ipswich area (TM 2043, VC 25) and again these were recorded as *E. turbidella*. As *E. turbidella* had not been recorded previously from either West or East Suffolk vice-counties, AWP forwarded the details of these records to John Langmaid for inclusion in the Microlepidoptera Review for 2002. Dr Langmaid noticed the lack of specificity about the type of poplar that these mines had been found in and informed us that *E. turbidella* had only been recorded mining *P. canescens* in this country. Referring back to the leaf mines taken from the Mildenhall site we came to the conclusion that these were not within in the leaves of *P. canescens*, but most likely a hybrid of *Populus nigra* was involved; a subsequent visit to the site confirmed them as *P.* × *canadensis*.

Because the mines found appeared to have very close similarities with other petiole-mining *Ectoedemia* this lead us to consider that they were either mines of *E. turbidella* on a new foodplant or else a new species of *Ectoedemia* not covered by the existing key. In 2003, Neil Sherman and AWP collected mines from the two known sites to rear through for confirmation of their identity, as the mines taken in 2002 had not been reared through. JC also took some mines from the Ipswich site to rear through.

Examples of the mines were shown at a Norfolk Moth Survey meeting in November 2003 and subsequently Andy Musgrove found similar mines on hybrid black poplar at Thetford (TL 8782, VC 28) on 13 November 2003. Further sites with mines on *P.* × *canadensis* were found by AWP at Brandon (TL 7886, VC 26) on 3 October 2003 and Melton (TM 2850, VC 25) on 9 November 2003.

In April and early May 2004, adults from mines from the Ipswich site raised by JC and NS started to emerge. As *E. turbidella* and *E. hannoverella* are indistinguishable externally the genitalia were examined. These confirmed the identity to be *Ectoedemia hannoverella*. Mines raised by AWP from the Mildenhall site were brought inside later and these emerged in May 2004 and were also confirmed by genitalia examination to be *E. hannoverella*.

Recognition

Ectoedemia hannoverella (Glitz, 1872)

Nepticula hannoverella Glitz, 1872, Stett. ent. Ztg. **33**: 23-26

Adult ♂ ♀. (Plate H, Fig. 1).

Descriptions are based on British material from Mildenhall and Ipswich. Wingspan 6 – 7 mm. Head with yellow-orange frontal tuft, eye scapes off-white, antennae uniform dark-brown. Thorax dark blue-black, sometimes with off-white scales along anterior edge. Abdomen dark blue-black. Forewing, dark blue-black with white basal spot, a white costal spot and white dorsal spot just beyond the mid-point, in some specimens the dorsal spot extends to join costal spot to form a white fascia, a short oblique white spot arising from the costa in the basal area extending distally, scattered white scales in the basal area, cilia off-white. Hindwing pale grey.

Genitalia (♂). (Plate G, Figs. 1 and 2)

The inner margin of the valva is fairly straight along its length, the outer margin being strongly curved, the apex not being separated or with tips. The aedeagus having two pairs of similar pointed spines at the tip, the lower pair slightly more curved than the upper pair. The most distinctive area of the process was the fairly long and pointed gnathos with a series of spines positioned centrally rather like a 'flower arrangement' (just visible in the photo). This can become rather obscured when under the microscope cover slip if it becomes twisted.

Genitalia (♂). (Plate G, Fig. 3)

Ovipositor having a distinctive blunt tip. Relatively long corpus bursae. Anterior apophyses fairly broad throughout the length, posterior apophyses broad and curving inwards at their tips. Signa long.

Larval mine. (Plate H, Figs. 2 and 3)

Based on the mined leaves examined the egg is laid at approximately one-third the distance along the petiole from the base. This differs from the description in Johansson *et al* (1989), which states that the egg is laid 1 cm from the lamina. The mine starts in the petiole, extending to the leaf base, causing thickening and often discolouration of the petiole. On reaching the leaf base the mine expands into a blotch in the lamina between the first lateral vein and the leaf margin. Johansson *et al* (*op. cit.*) mention that the blotch mine may be formed between the mid-rib and the first lateral vein, although this behaviour has not been observed in mines examined so far. As the larva continues to feed and extend the blotch its black frass is laid down in two

parallel lines extending from the petiole into the blotch. This forms a passage from the area of the leaf where the larva is feeding down to the petiole that the larva may use to retreat back into the petiole. The mines often form 'green islands' in fallen leaves, the leaf retaining its green colour in the area around the mine while the rest of the leaf loses its green colour turning brown.

Biology and distribution

The following description of the biology is from Johansson *et al* (1989), except where explicitly stated to refer to findings in this country. Host plants include *Populus nigra* and its hybrids (*P. × canadensis*) although so far in this country mines have only been found in *P. × canadensis*. The species is single brooded with adults being found in May and June. The larvae start feeding in July and appear to start blotch mining earlier than *E. turbidella* with tenanted mines having been found in this country from late September through to early November. Pupation occurs outside the mine.

In Europe it is widespread and often abundant in Netherlands, Belgium, Germany, Poland, Switzerland, Austria, Hungary and northern Italy with the species also being present in east France, Czechoslovakia, northern Yugoslavia, Denmark and Sweden.

Remarks

In the European Checklist, Karsholt and Razowski (1996) position *E. hannoverella* as species number 269, after 268 *E. intimella* (Zell.) and before 270 *E. turbidella* (Zell.). In the British checklist (Bradley, 2000) the positions of *E. turbidella* and *E. intimella* are reversed, with the latter preceding the former. In consideration of this, we suggest that *E. hannoverella* should be placed in the British list immediately after *E. turbidella* (Zeller, 1848) and be given the checklist number 24a.

Specimens of the adult have been retained in the collections of the authors. Slides of the genitalia are held in J. Clifton's collection.

Acknowledgements

We would like to thank the following people for their assistance: Neil Sherman for providing a ready source of tenanted leaf mines, for taking part in the rearing through of adults and the photograph of the adult, John Langmaid for catching our initial misidentifications and for additional advice, Brian Goodey for taking the photographs of the genitalia and Rob Edmunds for photographs of the leaf-mine.

References

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- Johansson, R., Nielsen, E. S., Nieukerken, E. J. van, and Gustafsson, B., 1989. The Nepticulidae and Opostegidae (Lepidoptera) of North West Europe. *Fauna Entomologica Scandinavica* 23: 1 – 739.
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Fig. 1. Male genitalia of *E. hannoverella* (J. Clifton coll., slide number 164).

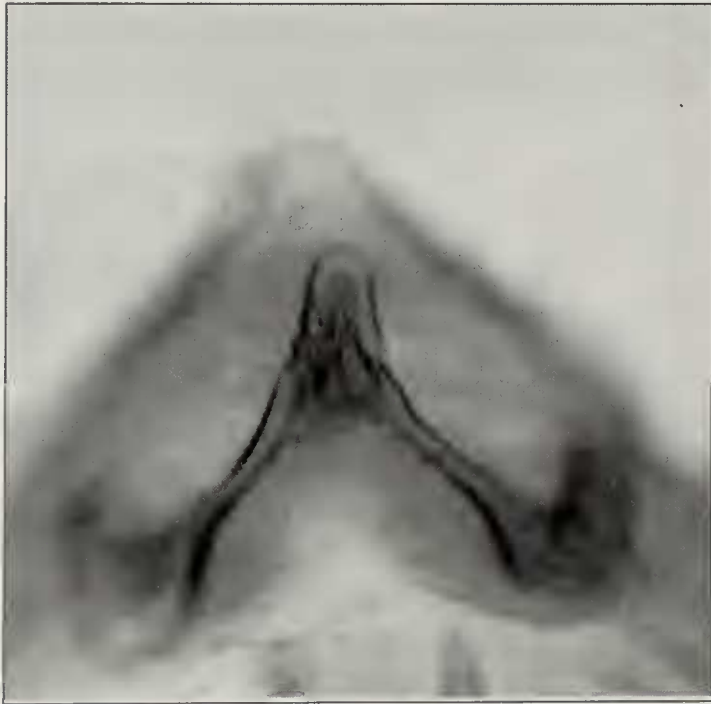


Fig. 2. Male genitalia of *E. hannoverella*, showing detail of gnathos. (J. Clifton coll., slide number 164).

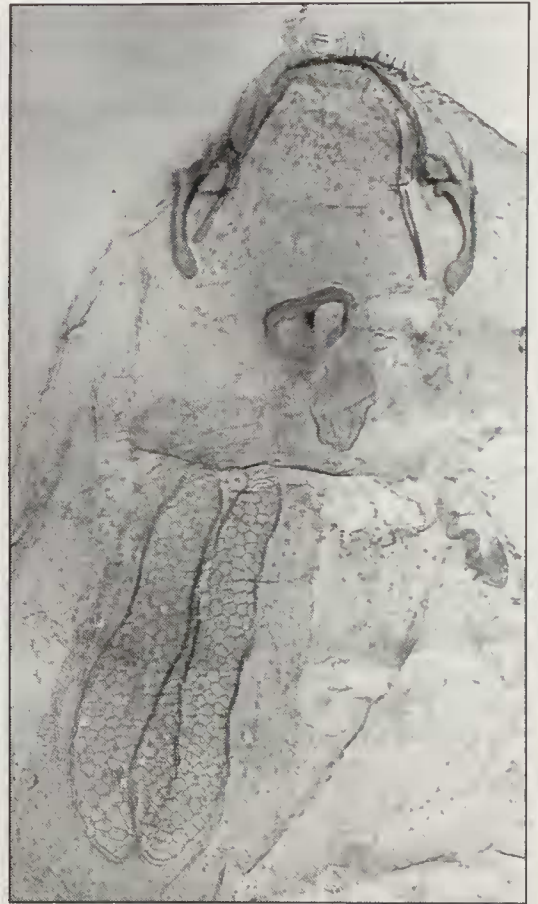


Fig. 3. Female genitalia of *E. hannoverella* (J. Clifton coll., slide number 165)



Fig. 1 *Ectoedemia hannoverella* (Glitz, 1872). Ipswich, 28 April 2004.



Fig. 2. Leaf-mine of *E. hannoverella* in *P. × canadensis*. Ipswich, 7 November 2003.

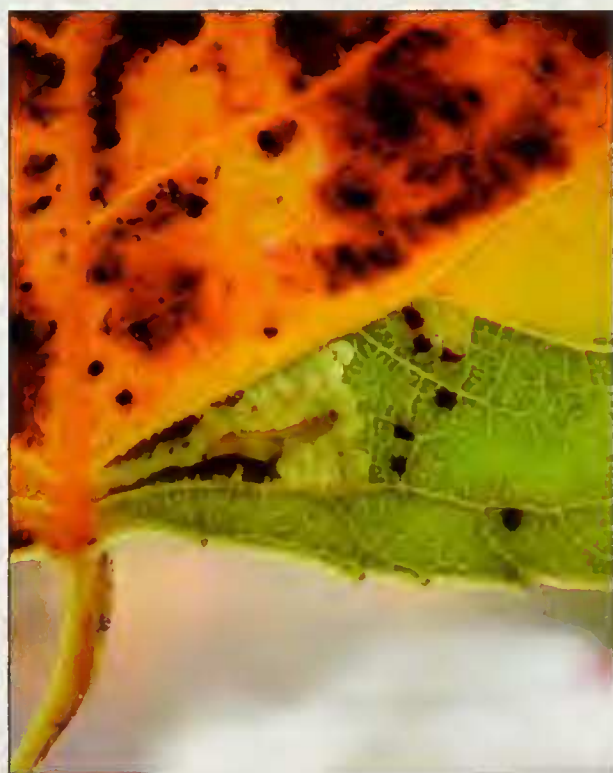


Fig. 3. Leaf-mine of *E. hannoverella*, showing detail of larva and parallel tracks of frass in blotch. Ipswich, 7 November 2003.

PLATE H

Satin Lutestring *Tetheella fluctuosa* (Hb.) (Lep.: Thyatiridae) oviposition

As shown by the map in Emmet & Heath (1992) *The Moths and Butterflies of Great Britain and Ireland* vol. 7(2), Satin Lutestring *Tetheella fluctuosa* has a disjunct distribution in Britain. In Scotland it is so scarce and local that even many resident lepidopterists (including myself) have never seen it there in the wild. So I was pleased when David Barbour kindly gave me a live female caught in Glen Affric, East Inverness-shire, on 29.v.2003.

The moth was a large example (maximum wingspan 42mm), strikingly patterned in sooty black and silvery white. Hoping to obtain eggs, I placed her in a roomy container with freshly cut sprigs of birch *Betula* from several different trees. A pad of cotton wool soaked in honey and water was also provided. Laying began on the night of 30 May, and the female appeared spent by 6 June. The eggs were then counted, totalling 185.

The precision with which the eggs had been placed was most remarkable, so the exact site of each egg was documented. In all, 175 eggs were placed near the tip of a serration around the edge of a birch leaf, usually singly but sometimes two together. Virtually all were on the upper surface of the leaf. The remaining ten were on leaf stalks. No eggs were laid elsewhere on the leaves, or on the birch twigs. No eggs were laid on the plastic container, its kitchen towel lining, or on the clingfilm cover.

Of the several morphologically different strains of birch provided, the female clearly preferred one with large, thick, rounded, dark green leaves that were slightly cupped, ignoring sprigs from trees with smaller, more papery, kite-shaped leaves. The ovoid eggs were pearly white (not yellow, as given in Emmet & Heath (*loc. cit.*), and surprisingly inconspicuous on the leaf. They resembled bulbous tips to the leaf's serrated teeth that were catching the light, being unrecognisable as eggs from most angles.

While it is not always safe to assume that behaviour in captivity reflects that in the wild, I would be surprised if the egg-laying precision shown by this female were not the normal habit. It is possible, however, that fewer eggs would have been laid per leaf if she had been unrestricted.

When the larvae hatched they were given birch sprigs from the female's preferred tree. There were heavy losses initially, as warned by Porter (1997. *The Colour Identification Guide to Caterpillars of the British Isles*). Most hatchlings climb, but these descended to the bottom of their container, even beneath the kitchen towel lining, where many starved to death before the problem was noticed. Once persuaded to begin feeding, rearing was straightforward. In the early instars, they fenestrated the birch leaves; later, they ate irregular holes into the leaves.

Porter (*op. cit.*) illustrates the caterpillar in its final instar, when the whitish lateral markings and dorsal freckling are distinctive. In the earlier instars these are absent, and it could easily be mistaken for the larva of Common Lutestring *Ochropacha duplaris*, except that the thoracic plate is pale in Satin Lutestring rather than black.

I am grateful to David Barbour for providing me with the parent moth.— ROY LEVERTON, Whitewells, Ordiquhill, Cornhill, Banffshire AB45 2HS.